521 M7280 – SATELLITE GEODESY

SPRING SEMESTER 2017

Lab No. 10

handed out Wednesday, June 07, 2017
due Wednesday, June 14, 2017, 09:10 **Name:** _____

GPS Positioning: RINEX Observation Data + SP3 Orbital Data

In this lab, you are asked to:

1. Write a MATLAB program that reads GPS observation files in the RINEX format (you may download any RINEX file from the NGS website).

2. For each satellite, tabulate all C/A code range observations.

3. For each satellite, plot the C/A code range observations as functions of time.

4. Use the C/A code range observations together with the orbital data (from a SP3 file) to compute the receiver's coordinates and its uncertainties.

5. Discussion.

Use for $\boldsymbol{GM} = 398600.4418\left(\mathrm{km}^3/\mathrm{s}^2\right)$, $\omega_e^* = 7292115.8553\times10^{-11}\left(\mathrm{rad/s}\right)$, $\omega_e = 7292115\times10^{-11}\left(\mathrm{rad/s}\right)$, and $\boldsymbol{R} = 6371.000000\left(\mathrm{km}\right)$.

Your (individual) final report should contain (use A4 papers):

- this page as the cover sheet
- source code(s) and outputs; do not forget to add your name and lots of comment cards to the source listing (% .....)
- input and output files from program [input/output values used and calculated], if any
- plots, including captions on axes, title, your name, LB#/HM#, course title, date (if any)
- derivation and description of formulas used, accompanied by figures where applicable
- evidence of computational accuracy
- discussion of results